

MAR 08 2004

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PTO/SB/21 (03-03)

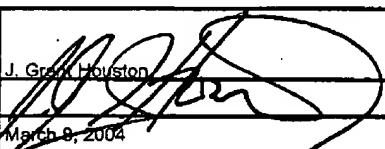
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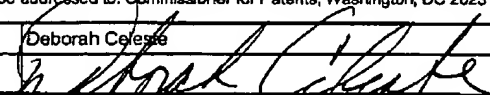
<b>TRANSMITTAL FORM</b>  <i>(to be used for all correspondence after initial filing)</i>	Application Number	09/757,856	
	Filing Date	January 11, 2001	
	First Named Inventor	Dale C. Flanders	
	Art Unit	3742	
	Examiner Name	Jeffery, John A.	
Total Number of Pages in This Submission	11	Attorney Docket Number	1028.co

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to a Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input checked="" type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
Remarks		

## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual	J. Grant Houston
Signature	
Date	March 8, 2004

## CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: March 8, 2004		
Typed or printed	Deborah Celeste	
Signature		Date March 8, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

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PTO/SB/17 (10-03)

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**FEE TRANSMITTAL**  
**for FY 2004**

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27**TOTAL AMOUNT OF PAYMENT** (\$)**165.00****Complete If Known**

Application Number	09/757,856
Filing Date	January 11, 2001
First Named Inventor	Dale C. Flanders
Examiner Name	Jeffery, John A.
Art Unit	3742
Attorney Docket No.	1028.co

**METHOD OF PAYMENT (check all that apply)**☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit Account Number  
Deposit Account Name

501547

AXSUN Technologies, Inc.

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments☒ Charge any additional fee(s) or any underpayment of fee(s)☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.**FEE CALCULATION****1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385	Utility filing fee	
1002 340	2002 170	Design filing fee	
1003 530	2003 265	Plant filing fee	
1004 770	2004 385	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	
<b>SUBTOTAL (1)</b>			<b>(\$)</b>

**2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE**

Total Claims  -20\*\* =  X  =

Independent Claims  -3\*\* =  X  =

Multiple Dependent  =

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

**SUBTOTAL (2)**(\$)**0**

\*\*or number previously paid, if greater; For Reissues, see above

**FEE CALCULATION (continued)****3. ADDITIONAL FEES**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for <i>ex parte</i> reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 420	2252 210	Extension for reply within second month	
1253 950	2253 475	Extension for reply within third month	
1254 1,480	2254 740	Extension for reply within fourth month	
1255 2,010	2255 1,005	Extension for reply within fifth month	
1401 330	2401 165	Notice of Appeal	
1402 330	2402 165	Filing a brief in support of an appeal	\$165.00
1403 290	2403 145	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,330	2453 665	Petition to revive - unintentional	
1501 1,330	2501 665	Utility issue fee (or reissue)	
1502 480	2502 240	Design issue fee	
1503 640	2503 320	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	
1807 50	1807 50	Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 770	2809 385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385	For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

\*Reduced by Basic Filing Fee Paid

**SUBTOTAL (3)** (\$)**165.00****SUBMITTED BY**

Name (Print/Type)	J. Grant Houston	Registration No. (Attorney/Agent)	35,900	Telephone	978-439-3479
Signature		Date	March 8, 2004		

(Complete if applicable)

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MAR 08 2004

OFFICIAL

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re: Dale C. Flanders, *et al.*

Serial No: 09/757,856

Filed: January 11, 2001

For: Method and System for Feedback  
Control of Optical Fiber Lens Fusing

Group: 3742

Examiner: Jeffery, John  
A.

Confirmation No: 8212

Date: March 8, 2004

APPELLANTS' BRIEF

VIA FACSIMILE: 703-872-9306

Mail Stop Appeal Brief- Patents  
Commissioner for Patents  
P.O. Box 1450,  
Alexandria, Virginia 22313-1450

Sir:

This is the Applicants' appeal from the Office Action, mailed July 9, 2003 (Paper No. 13).

For the purposes of determining the timeliness of this appeal, it should be noted that, although the Office Action Summary page of the July 9<sup>th</sup> Office Action identifies the Action as both "Final" and "non-Final", the subsequent Advisory Action, mailed December 30, 2003, reclassifies the status of that earlier Action as simply being "Final". Thus, Applicants believe that this appeal should be deemed timely.

**Real Party of Interest**

Axsun Technologies, Inc. is the real party in interest.

**Related Appeals and Interferences**

There are no related appeals or interferences.

**Status of Claims**

Claims 1-12 and 14-17 are pending in this application. Claims 1-12 and 14-17 stand finally rejected pursuant to the outstanding Office Action.

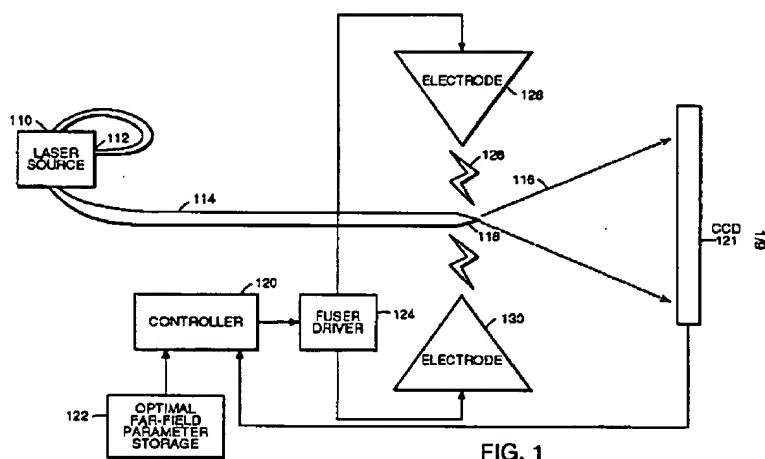
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### Status of Amendments

All Amendments have been entered.

### Summary of the Invention

The present invention concerns a system, and associated method, for fusing an optical fiber lens.



The system is compatible with automation. Specifically, the fusing of the fiber lens 118 is controlled in response to a diffraction pattern of light exiting from the fiber lens and detected by CCD 121. The pattern is then analyzed by controller 120.

This detected diffraction pattern is indicative of the lens shape and characteristics and can be compared to optimal pattern characteristics that can be accessed from the storage 122.

An exemplary polished wedged shaped lens is shown below:

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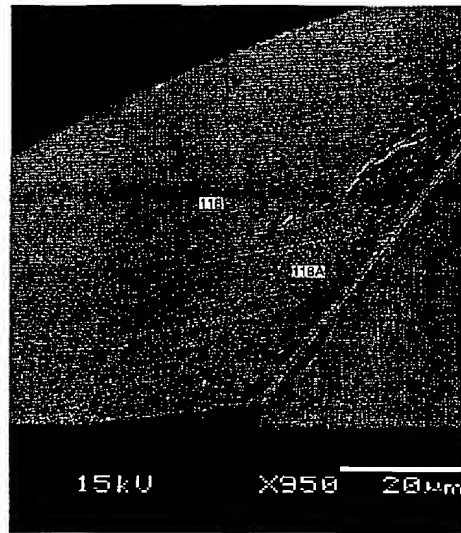
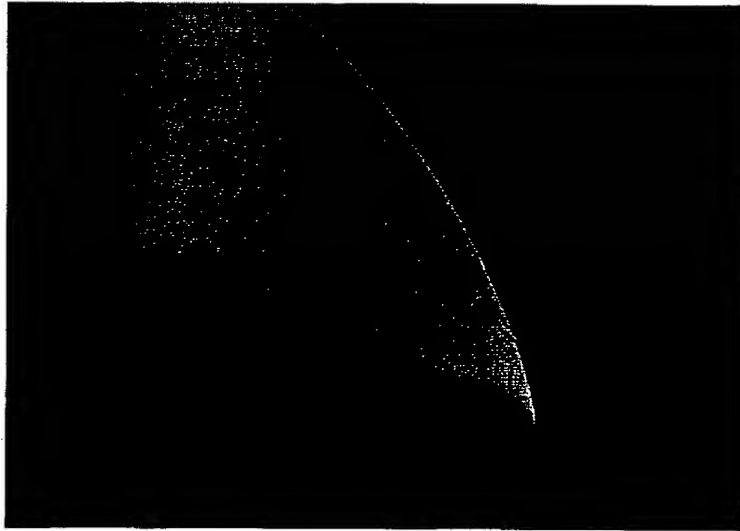


FIG. 2

This polished wedge shaped lenses is processed to yield an exemplary optimal wedge-shaped lens after fusing by the inventive system, as shown below:



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### Issues

1. Whether Claims 1-5, 7-11, and 16 are obvious over Honmou (US 5,563,969) in view of Irie, *et al.* (US 6,301,406).
2. Whether Claims 6, 12, 14, 15, and 17 are obvious over the Honmou Patent in view of Irie, *et al.* Patent, in further view of Fanning (US 4758386).

### Grouping of Claims

The claims 1-4 and 8-12, stand or fall together. The remaining claims stand or fall individually from each other.

### Argument

Claim 1 is directed to a method for fusing an optical fiber lens. The method comprises injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber, detecting a diffraction pattern of the light exiting from the fiber lens, and electro-fusing the fiber lens in response to a two-dimensional distribution of the diffraction pattern.

In a similar vein claim 8 is directed to a corresponding "system".

Neither the Honmou patent nor the Irie, *et al.* patent shows or suggests the step of electro-fusing the fiber lens in response to a two-dimensional distribution of the diffraction pattern. The most relevant portion from the patents is found in the Honmou patent, which teaches that the fusing should be performed in response to the diameter.

In fact, the Final/non-Final Office Action admits that the claims "differ from the.. cited prior art in calling for the controller to determine a ratio of lateral size to transverse size of the diffraction pattern."

To address this deficiency in the references, the Final/non-Final Office Action argues that there is no criticality in the ratio of sizes, for example, being a mere engineering design preference.

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There is no evidence to support this contention that the fusing in response to the two-dimensional pattern is a mere design preference. In fact, the most relevant evidence of record is Applicants' application, which includes actual data showing the required number of fusing, and improvements derived from fusing, and far field images showing the resulting improvements. In short, the Applicants demonstrated that there is criticality in the "ratio of sizes", since it is the foundation for the performance gains described by Applicants.

In a similar vein, claim 16 requires the electro-fusing of the fiber lens in response to the aspect ratio of the diffraction pattern by exposing the fiber lens to an electrical arc until an optimal aspect ratio is detected. None of the applied references shows or suggests aspect ratio detection and/or arc exposure until an optimal aspect ratio is detected.

Claim 5 further specifies the step of analyzing a two-dimensional distribution of the diffraction pattern. Again, the Honmou, only teaches diameter detection.

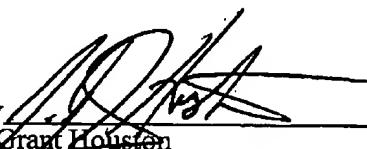
Finally, claims 6 and 14 require determining a ratio of a lateral size to a transverse size of the diffraction pattern, which is also not shown.

While admitting that determining a ratio of a lateral size to a transverse size, for example, is not shown by the applied references, the Office Action argues that this is mere "optimum or workable ranges." This analogy is not apt. The Applicants are proposing an entirely new measurement processing solution, involving the measurement of characteristics, not appreciated by the applied references, and control in response to those characteristics. These are not mere workable ranges as argued in the Office Action.

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For the foregoing reasons, Applicants believe that the pending rejections should be withdrawn, and that the present application should be passed to issue. Should any questions arise, please contact the undersigned.

Respectfully submitted,

By   
J. Grant Houston  
Registration No.: 35,900  
Axsun Technologies, Inc.  
Tel.: 978-439-3479  
Fax: 978-262-0035

Billerica, MA 01821  
Date: 3/8/04



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## Appendix

1. (previously presented) A method for fusing an optical fiber lens, comprising:  
injecting light into an optical fiber having a wedge-shaped fiber lens formed by  
polishing at a proximal end of the optical fiber;  
detecting a diffraction pattern of the light exiting from the fiber lens; and  
electro-fusing the fiber lens in response to a two-dimensional distribution of  
the diffraction pattern.
2. (previously presented) A method as claimed in claim 1, wherein the step of  
injecting the light into the optical fiber comprises energizing a laser that is  
coupled to a distal end of the optical fiber.
3. (original) A method as claimed in claim 1, wherein the step of detecting the  
diffraction pattern comprises detecting a far-field diffraction pattern.
4. (original) A method as claimed in claim 1, wherein the step of detecting the  
diffraction pattern comprises positioning a two-dimensional detector optically in  
front of the fiber lens.
5. (original) A method as claimed in claim 1, further comprising analyzing a  
two-dimensional distribution of the diffraction pattern.
6. (original) A method as claimed in claim 5, wherein the step of analyzing the  
diffraction pattern comprised determining a ratio of a lateral size to a transverse  
size of the diffraction pattern.
7. (original) A method as claimed in claim 1, wherein the step of fusing the fiber  
lens comprises exposing the fiber lens to an electrical arc.
8. (previously presented) A system for fusing an optical fiber lens, comprising:  
a light source that injects light into an optical fiber;

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a detector that detects a two-dimensional distribution of a diffraction pattern of the light exiting from a fiber lens at a proximal end of the optical fiber, the fiber lens being wedge-shaped and having been formed by polishing;  
an arc fuser that fuses the fiber lens; and  
a controller that activates the arc fuser in response to the two-dimensional distribution of the diffraction pattern detected by the detector.

9. (original) A system as claimed in claim 8, wherein the light source comprises a laser that is coupled to a distal end of the optical fiber.

10. (previously presented) A system as claimed in claim 8, wherein the detector is positioned relative to the fiber lens to detect a far-field diffraction pattern.

11. (original) A system as claimed in claim 8, wherein the detector is positioned greater than 0.5 centimeters from the fiber lens.

12. (original) A system as claimed in claim 8, wherein detector comprises a camera.

13. (cancelled)

14. (original) A system as claimed in claim 8, wherein the controller determines a ratio of a lateral size to a transverse size of the diffraction pattern.

15. (original) A system as claimed in claim 8, wherein the controller activates the arc fuser in a pulsed fashion until a desired diffraction pattern is detected by the detector.

16. (previously presented) A method for fusing an optical fiber lens, comprising:  
injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber;  
detecting an aspect ratio of a diffraction pattern of the light exiting from the fiber lens by positioning a two-dimensional detector optically in front of the fiber lens; and

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electro-fusing the fiber lens in response to the aspect ratio of the diffraction pattern by exposing the fiber lens to an electrical arc until an optimal aspect ratio is detected.

17. (previously presented) A method as claimed in claim 16, wherein the step of electro-fusing the fiber lens by exposing the fiber lens to the electrical arc comprises exposing the fiber lens to electrical arc pulses.